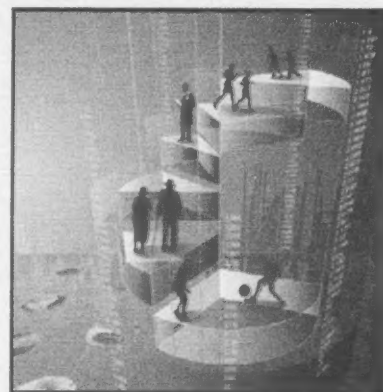


Health Reports

Symptom onset, diagnosis and management of osteoarthritis

by Karen V. MacDonald, Claudia Sanmartin, Kellie Langlois
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| .. | not available for any reference period |
| ... | not available for a specific reference period |
| ... | not applicable |
| 0 | true zero or a value rounded to zero |
| 0 ^a | value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded |
| ^p | preliminary |
| ^r | revised |
| X | suppressed to meet the confidentiality requirements of the <i>Statistics Act</i> |
| E | use with caution |
| F | too unreliable to be published |
| * | significantly different from reference category ($p < 0.05$) |

Symptom onset, diagnosis and management of osteoarthritis

by Karen V. MacDonald, Claudia Sanmartin, Kellie Langlois and Deborah A. Marshall

Abstract

Background

The time between symptom onset and physician diagnosis is a period when people with osteoarthritis can make lifestyle changes to reduce pain, improve function and delay disability.

Data and methods

This study analyses data for a nationally representative sample of 4,565 Canadians aged 20 or older who responded to the Arthritis component of the 2009 Survey on Living with Chronic Diseases in Canada. Descriptive statistics are used to report the prevalence of hip and knee osteoarthritis, the mean age of symptom onset and diagnosis, medication use, and contacts with health professionals during the previous year.

Results

Among people with a physician diagnosis of arthritis, 37% reported osteoarthritis. Of these, 70% experienced pain in the hip(s), knee(s), or hip(s) and knee(s). Close to half (48%) of these people experienced symptoms the same year they were diagnosed, 42% experienced symptoms at least a year before the diagnosis, and 10% experienced symptoms after the diagnosis. Among those who had symptoms before diagnosis, the average time between symptom onset and diagnosis was 7.7 years.

Interpretation

Individuals with osteoarthritis may experience symptoms for several years before they obtain a physician diagnosis.

Keywords

Arthritis, disease progression, non-prescription drugs, patient education, physical therapy, prescription drugs, occupational therapy

Authors

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Osteoarthritis affects more than 10% of Canadians aged 15 or older.^{1,2} It can result in disability and the need for joint replacement surgery.²⁻⁵ The strong association between osteoarthritis and advancing age means that as the population of Canada ages, it is important to understand the prevalence and impact of the condition and strategies that individuals use to manage their symptoms. The time between symptom onset and physician diagnosis is a period when people with osteoarthritis can make lifestyle changes to reduce pain, improve function and delay disability.

The literature on osteoarthritis symptom management focuses on strategies led or suggested by physicians and other health care practitioners after an individual has sought care.⁶⁻¹² However, the length of time that people who experience joint pain, aching and stiffness endure these symptoms before seeking physician diagnosis and care has not been clearly determined. Furthermore, administrative data sources (for example, Discharge Abstract Database, pharmacy claims, practitioner claims) do not provide information about the time between symptom onset and diagnosis of osteoarthritis in the population, or joint-specific details such as side or single versus multiple joints affected.

This article is based on data collected by the 2009 Survey on Living with

Chronic Diseases in Canada. The primary objective is to estimate the time between symptom onset and physician diagnosis of osteoarthritis. The secondary objective is to describe management strategies employed by people with the condition. Osteoarthritis was selected for analysis because it is the most prevalent form of arthritis. The focus is on hip- and knee-related osteoarthritis, the joints most commonly affected.

Data and methods

Data sources

The Survey on Living with Chronic Diseases in Canada (SLCDC) is a cross-sectional survey conducted by Statistics Canada every two years in collaboration with the Public Health Agency

of Canada.¹³ The 2009 SLCDC was developed and funded to gain detailed information specifically about arthritis and hypertension.¹³ The present study is based on the Arthritis component.

Data were collected in February and March 2009 using computer-assisted telephone interviewing.¹³ The sample was drawn from respondents to the 2008 Canadian Community Health Survey (CCHS), which covered the population living in private households in the 10 provinces. The 2008 CCHS excluded residents of the three territories, Indian reserves and institutions, and full-time members of the Canadian Forces. CCHS respondents aged 20 or older who reported having been diagnosed with arthritis by a medical professional, and who provided sufficient information to conduct the interview (contact information) were eligible for the Arthritis component of the SLCDC (n = 7,062). The sample was chosen using systematic sampling after the units were sorted by province, CCHS collection period, and age. The sample size was calculated to provide reliable estimates at the national level by age group and sex. A total of 5,820 CCHS respondents were selected for the SLCDC; 4,565 agreed to participate and have their responses linked to the 2008 CCHS. The overall response rate to the Arthritis component was 78.4%.¹³

The information collected in the Arthritis component included: painful joint and side of body, age at diagnosis, age at symptom onset, arthritis type,

medication use (prescription and non-prescription), and use of health services (for example, pharmacist, physiotherapist, occupational therapist) (Appendix Table A).¹⁴

Study sample

Respondents with arthritis diagnosed by a physician were asked what type. They chose from a list of 14 types, including osteoarthritis; respondents could indicate more than one type. This study pertains to people who reported a physician diagnosis of osteoarthritis (n = 1,755), and no other arthritis diagnoses.

Measures

Respondents were asked about their experience of joint pain in the past month and which joint was affected. They were given a list from which they could indicate more than one painful joint. Those with hip-related osteoarthritis (no knee pain), knee-related osteoarthritis (no hip pain), and both hip- and knee-related osteoarthritis were identified. These respondents may have also reported pain in other joints.

The time from symptom onset to diagnosis was calculated as age when diagnosed with osteoarthritis minus age when symptoms (pain, aching or stiffness) were first experienced.

Respondents were asked about their use of prescription and non-prescription drugs for their arthritis in the past month. They were also asked if they had contacted (seen or talked to) another health care professional (pharmacist, phys-

iotherapist or occupational therapist, class for managing arthritis) about their arthritis in the past year.¹⁴

Appendix Table A contains a full list of the SLCDC measures used in this analysis.

Statistical methods

Descriptive statistics (means for continuous variables, percentages for categorical variables) were used to report the prevalence of osteoarthritis (any joint), and hip-, knee-, or hip- and knee-related osteoarthritis; the mean age of symptom onset and diagnosis; medication use; and contacts with health professionals during the previous year (Appendix Tables B and C). Estimates were weighted to represent the household population with arthritis.¹³ To account for the sampling design of the SLCDC, the bootstrap method was used to estimate 95% confidence intervals (CI). All analyses were performed using SUDAAN version 10 software (Research Triangle Institute). To be included in the study sample, respondents were required to report type of arthritis and joint (non-missing data). There were no missing data; however, respondents could answer "don't know" to some questions.

Results

Prevalence of osteoarthritis

An estimated 37% of Canadians aged 20 or older who had been diagnosed with arthritis reported osteoarthritis as their only form of the condition. Of these, 12%

Table 1
Prevalence of osteoarthritis, by age group and site of joint pain, household population aged 20 or older diagnosed with arthritis, Canada excluding territories, 2009

Site of joint pain	Total		Age group							
			20 to 49		50 to 64		65 or older			
	%	95% confidence interval from to	%	95% confidence interval from to	%	95% confidence interval from to	%	95% confidence interval from to		
Osteoarthritis (any joint) ¹	37.1	34.5 39.8	16.0	12.6 20.0	39.5	35.1 44.0	44.6	40.9 48.3		
Hip and knee ¹	28.7	25.3 32.3	17.4 ²	12.4 23.9	37.6	30.2 45.6	45.0	38.3 51.9		
Hip ¹	12.3	10.1 15.0	8.8 ²	5.5 13.9	47.2	37.3 57.3	44.0	34.8 53.6		
Knee ¹	29.4	26.1 33.0	13.0 ²	9.2 18.1	38.3	31.2 46.0	48.7	41.6 55.8		

¹ denominator is population with arthritis

² denominator is population with osteoarthritis

³ use with caution

Note: Site of pain asked only of those who experienced pain in last month.

Source: 2009 Survey on Living with Chronic Diseases in Canada - Arthritis.

Table 2

Timing of symptom onset and diagnosis, by site of joint pain and age group, household population aged 20 or older diagnosed with osteoarthritis, Canada excluding territories, 2009

Site of joint pain and age group	Timing of symptom onset and diagnosis									Mean years between symptom onset and diagnosis					
	Symptoms preceded diagnosis			Symptoms occurred same year as diagnosis			Symptoms followed diagnosis			Symptoms preceded diagnosis			Symptoms occurred same year as diagnosis		
	95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval		
	%	from	to	%	from	to	%	from	to	Mean	from	to	Mean	from	to
Total	41.6	37.2	46.2	48.1	43.8	52.6	10.2	8.1	12.9	7.7	6.4	8.9	...	-7.8	-9.4 -6.3
Site of joint pain															
Hip and knee	39.1	32.2	46.5	49.3	41.9	56.8	11.6 ^f	7.7	16.9	8.3	6.9	9.8	...	-8.4	-11.0 -5.9
Hip	43.0	32.6	53.9	45.1	34.7	55.9	12.0 ^f	7.0	19.7	6.8 ^f	4.4	9.2	...	-7.7 ^f	-11.0 -4.4
Knee	43.7	36.7	51.1	47.9	40.7	55.2	8.3 ^f	5.7	12.1	9.0 ^f	5.9	12.2	...	-5.9	-7.3 -4.6
Age group															
20 to 49	68.6	57.1	78.2	27.0 ^f	18.4	37.9	x	x	x	5.6	4.1	7.1	...	x	x x
50 to 64	41.8	34.5	49.5	49.2	41.8	56.6	9.0 ^f	5.5	14.5	7.2	6.1	8.3	...	-5.7 ^f	-7.7 -3.8
65 or older	31.2	26.6	36.3	55.2	49.9	60.3	13.6	10.3	17.6	10.0	7.0	13.0	...	-9.4	-11.6 -7.2

^f use with caution

x suppressed to meet confidentiality requirements of Statistics Act

... not applicable

Note: Site of pain asked only of those who experienced pain in last month.

Source: 2009 Survey on Living with Chronic Diseases in Canada - Arthritis.

Table 3

Mean age at symptom onset and diagnosis, by site of joint pain, household population aged 20 or older diagnosed with osteoarthritis, Canada excluding territories, 2009

Site of joint pain	Age first diagnosed			Age at symptom onset			Difference		
	95% confidence interval			95% confidence interval			95% confidence interval		
	Mean	from	to	Mean	from	to	Mean	from	to
Any joint	50.4	49.4	51.4	47.6	46.5	48.7	2.4 ^f	1.7	3.1
Hip and knee	47.6	45.9	49.3	45.2	43.3	47.0	2.3 ^f	1.3	3.3
Hip	50.8	48.6	53.0	48.9	46.6	51.1	F	F	F
Knee	53.4	51.5	55.2	49.4	47.5	51.4	3.4 ^f	1.9	5.0

^f use with caution

F too unreliable to be published

Notes: Estimates of mean ages include all individuals, regardless of sequence of events (symptoms preceded, occurred in same year or followed diagnosis). Site of pain asked only of those who experienced pain in last month.

Source: 2009 Survey on Living with Chronic Diseases in Canada - Arthritis.

experienced pain in their hip(s); 29%, in their knee(s), and 29%, in both (Table 1).

The prevalence of osteoarthritis (any joint) and hip- and knee-related osteoarthritis rose with advancing age (Table 1). For example, among people with arthritis, 16% of those aged 20 to 49 reported osteoarthritis (any joint), compared with 45% of those aged 65 or older. The pattern was similar for hip- and knee-related osteoarthritis.

Symptom onset and diagnosis

Nearly half (48%) of people with osteoarthritis (any joint) experienced symptoms

and were diagnosed in the same year (Table 2). Another 42% had symptoms at least a year before diagnosis, and for about 10%, symptoms emerged after they had been diagnosed. This pattern held for hip- and knee-related osteoarthritis.

Seniors were more likely than 20- to 49-year-olds to experience symptoms and be diagnosed with osteoarthritis (any joint) in the same year (55% versus 27%).

For people who experienced symptoms of osteoarthritis (any joint) before they were diagnosed, the average time to diagnosis was 7.7 years (Table 2). The

length of this period ranged from 6.8 years to 9.0 years across joint pain sites, and varied by age group from 5.6 years among those aged 20 to 49 (95% CI: 4.1-7.1) to 10 years (95% CI: 7.0-13.0) among seniors.

Age at onset and age at diagnosis

The average age at which people with osteoarthritis (any joint) had been diagnosed was 50.4 years (95% CI: 49.4-51.4); the average age at which symptoms were first experienced was 47.6 years (95% CI: 46.5-48.7) (Table 3). These estimates include all individuals with osteoarthritis, regardless of the timing of events—symptoms preceded, occurred same year, or followed diagnosis. As well, the averages pertaining to osteoarthritis in the knee or hip do not account for the possibility that these people had been diagnosed with osteoarthritis in another joint before they experienced symptoms in the hip and/or knee.

Prescription and non-prescription medications

An estimated 39% of individuals with osteoarthritis (any joint) managed their symptoms with prescription medications (Table 4). Among those with both hip- and knee-related osteoarthritis, the figure

was 52%. The use of prescription medications for osteoarthritis (any joint) was fairly stable across age groups, ranging narrowly from 37% to 42% (Table 5).

Two-thirds (66%) of individuals with osteoarthritis (any joint) used non-prescription medications. Among those

with hip- and knee-related osteoarthritis and hip-related osteoarthritis, the figure was 74% (Table 4).

The prevalence of non-prescription medication use for osteoarthritis (any joint) ranged from 60% at ages 20 to 49 to 70% at ages 50 to 64 (Table 5).

What is already known on this subject?

- The time between symptom onset and physician diagnosis is a period when people with osteoarthritis can make lifestyle changes to reduce pain, improve function, and delay disability.
- The literature on symptom management focuses on strategies implemented after individuals have been diagnosed.
- Information is lacking about the length of time between experiencing symptoms of osteoarthritis and obtaining a diagnosis.

What does this study add?

- According to data from the Arthritis component of the 2009 Survey on Living with Chronic Diseases in Canada, the average age at symptom onset of osteoarthritis was 47.6 years.
- The mean age at diagnosis of osteoarthritis was 50.4 years.
- For people who experienced symptoms before they were diagnosed, the average time between symptom onset and diagnosis was 7.7 years.
- Most people (66%) with osteoarthritis used non-prescription medications to manage symptoms; fewer than 25% saw a pharmacist, physiotherapist, or occupational therapist; and 12% attended a class to manage arthritis related problems.

Discussion

The literature on osteoarthritis symptom management tends to focus on strategies led by or suggested by physicians and other health care practitioners after an individual has sought their care.⁶⁻¹² As well, although the literature has identified many reasons why individuals delay seeking treatment, information about how long they do so is lacking.

According to the present study, the average age at symptom onset of osteoarthritis was 47.6 years, slightly higher than the results of other studies, which reported symptom onset occurring in the 40 to 45 age range.¹⁵⁻¹⁷ Based on SLCD data, the mean time to diagnosis of osteoarthritis was almost three years later. For people who experienced symptoms *before* they were diagnosed, the average time between symptom onset and diagnosis was 7.7 years.

Seeking professional advice

In the previous 12 months, 20% of people with osteoarthritis (any joint) had consulted a pharmacist; 22% had consulted a physiotherapist or occupational therapist; and 12% had attended an educational class to help them manage problems related to their arthritis (Table 6). The percentage who sought professional advice varied by the site of the joint pain. For example, 31% of those with both hip- and knee-related osteoarthritis consulted a pharmacist, compared with 18% of those with knee-related osteoarthritis.

Table 4

Prevalence of medication use, by site of joint pain, household population aged 20 or older diagnosed with osteoarthritis, Canada excluding territories, 2009

Site of joint pain	Prescription medications			Non-prescription medications		
	%	95% confidence interval		%	95% confidence interval	
		from	to		from	to
Any joint	39.4	35.4	43.6	66.3	62.1	70.2
Hip and knee	52.0	45.2	58.8	73.5	66.6	79.4
Hip	42.7	32.3	53.6	74.3	65.1	81.7
Knee	38.5	31.8	45.7	66.2	59.4	72.4

Note: Site of pain asked only of those who experienced pain in last month.
Source: 2009 Survey on Living with Chronic Diseases in Canada - Arthritis.

Table 5

Prevalence of medication use and contact with health professionals, by age group, household population aged 20 or older diagnosed with osteoarthritis, Canada excluding territories, 2009

Medication use and contact with health professionals	Age group								
	20 to 49			50 to 64			65 or older		
	%	95% confidence interval		%	95% confidence interval		%	95% confidence interval	
Prescription medications	40.0 ^a	26.7	54.9	36.8	30.5	43.5	41.5	36.7	46.5
Non-prescription medications	60.1	45.7	73.0	70.3	63.7	76.1	65.0	60.1	69.6
Contact with pharmacist (past 12 months)	21.7 ^a	14.6	31.0	16.3	12.5	20.9	22.7	18.4	27.6
Contact with physiotherapist (past 12 months)	15.6 ^a	9.3	25.1	26.5	20.3	33.9	20.4	16.5	25.1
Ever took class to manage arthritis	x	x	x	10.4 ^a	7.1	14.9	11.4	8.5	15.1

^a use with caution

x suppressed to meet confidentiality requirements of Statistics Act

Source: 2009 Survey on Living with Chronic Diseases in Canada - Arthritis.

Table 6

Prevalence of contact with health professionals, by site of joint pain, household population aged 20 or older diagnosed with osteoarthritis, Canada excluding territories, 2009

Site of joint pain	Contact pharmacist (past 12 months)			Contact physiotherapist (past 12 months)			Ever took class to manage arthritis		
	95% confidence interval			95% confidence interval			95% confidence interval		
	%	from	to	%	from	to	%	from	to
Any joint	20.0	17.1	23.2	22.1	18.7	25.9	12.2	9.3	15.9
Hip and knee	31.3	25.1	38.3	26.3	20.6	33.0	13.3 ^f	9.1	18.9
Hip	22.9 ^f	15.2	33.0	28.3 ^f	19.5	39.1	16.0 ^f	9.0	26.9
Knee	17.9	13.7	23.2	25.9	18.7	34.7	7.9 ^f	5.3	11.6

^f use with caution

Note: Site of pain asked only of those who experienced pain in last month.

Source: 2009 Survey on Living with Chronic Diseases in Canada - Arthritis.

Osteoarthritis-related pain and disability are commonly perceived as part of normal aging, an assumption that can lead to patient acceptance of symptoms and no treatment.^{18,19} For example, Gignac et al.¹⁸ found that focus group participants (with and without osteoarthritis) not only described osteoarthritis as a normal part of aging, but in some cases, reported that their physicians also viewed it this way.

Gender differences may also play a role in self-reporting functional limitations related to arthritis, as they are associated with duration of arthritis symptoms, disparities in health behaviours, household income and region of residence.²⁰

However, osteoarthritis is not necessarily a part of aging¹; timely and proper management of symptoms is important in delaying disability, and thereby, reducing long-term resource use.^{21,22}

According to the Public Health Agency of Canada, one in five individuals with arthritis reported that they did not have enough information about their condition.²³ In the present analysis, the percentage of people with osteoarthritis (any joint) who had ever taken a class to manage their arthritis was 12%. This finding suggests that an opportunity may exist to increase the use of educational programs for the management of hip and knee pain. For example, results of the 2007 to 2009 Canadian Health Measures Survey show that 24% of Canadians are

obese.²⁴ Obesity is a primary modifiable risk factor for osteoarthritis. Patient education programs related to exercise, healthy diets, and strategies to avoid joint stresses have been shown to be effective for managing symptoms and improving function, and are recommended in many arthritis care guidelines.²⁵⁻³²

Treatments provided by physiotherapists can help decrease pain and disability while improving function in individuals with osteoarthritis.^{26,33,34} As well, many arthritis care guidelines recommend treatments by physical or occupational therapists.^{26-28,30,35} Even so, the results of the SLDC for people with arthritis of any type indicate that comparatively few sought advice from a physical or occupational therapist.²³ The findings of the present analysis were similar—22% of individuals with osteoarthritis had consulted a physical or occupational therapist in the previous year. Furthermore, a notable 60% of individuals younger than 50 took non-prescription medications. The relative levels of use of physical or occupational therapist services and of non-prescription medications could be influenced by the perception that knee symptoms are a normal part of aging, the cost of services, or a lack of extended health insurance coverage.

The main limitations of this study are the cross-sectional design of the SLDC and the use of self-reported data, which have not been clinically validated and which are subject to recall bias. Also,

it was not possible to determine if symptom onset and diagnosis involved the same joint. For some variables, small sample sizes resulted in high variability of estimates. In addition, the generalizability of the results is limited. The data pertain only to osteoarthritis and exclude several population groups—members of the Canadian Forces, residents of the three territories and of Indian reserves, and residents of institutions. Finally, the analysis did not examine the availability and use of community programs (for example, fitness facilities, services or programs) for the management of symptoms.

Although costly and logistically difficult to implement at the population level, a longitudinal study would be helpful in understanding the factors (voluntary and involuntary) that influence the length of time between symptom onset and diagnosis of osteoarthritis.

Conclusion

For many people with osteoarthritis, several years elapse between symptom onset and diagnosis. This is a key period during which individuals have an opportunity to make dietary and lifestyle choices that might reduce pain, improve function and delay disability, and ultimately, reduce resource use. The present study fills a data gap by providing estimates about the length of this period, as well as post-diagnosis management strategies—information that is not available from administrative sources. ■

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Appendix

Table A
Measures analyzed from 2009 Survey on Living with Chronic Diseases in Canada

Measure	Survey question ^a	Possible answers
Diagnosis of arthritis	To begin, do you have arthritis, excluding fibromyalgia, that has been diagnosed by a health professional?	Yes/No
Type of arthritis	Do you know the kind of arthritis you have?	Yes/No
	What kind of arthritis do you have?	Osteoarthritis, rheumatoid arthritis, ankylosing spondylitis, gout, lupus (systemic lupus erythematosus), polymyalgia rheumatica, polymyositis, psoriatic arthritis, Reiter's syndrome, scleroderma/systemic sclerosis, Sjogren's syndrome, vasculitis, fibromyalgia, other (specify)
Duration between symptom onset and diagnosis	How old were you when you were first diagnosed with arthritis?	Age provided by respondent
	How old were you when you first started experiencing joint symptoms (of pain, aching or stiffness)?	Age provided by respondent
Joint-specific osteoarthritis	In the past month, how often have you experienced joint pain?	Always, often, sometimes, rarely, never
	In the past month, which joints have been painful?	Neck, shoulder (R/L), elbow (R/L), wrist (R/L), hand/fingers/thumb (R/L), back, hip (R/L), knee (R/L), ankle (R/L), foot/toes (R/L), other
Medication use	In the past month, did you take prescription medications for your arthritis?	Yes/No
	In the past month, did you take non-prescription medications (that is, over-the-counter products) such as pills, rubs or creams, excluding natural health products, for your arthritis?	Yes/No
Contact with health care professionals	In the past 12 months, have you seen, or talked to a pharmacist about your arthritis?	Yes/No
	In the past 12 months, have you seen, or talked to a physiotherapist or occupational therapist about your arthritis?	Yes/No
	Have you ever taken a course or class to teach you how to manage problems related to your arthritis?	Yes/No

R: right
L: left

Table B
Sample counts, by age group, household population aged 20 or older diagnosed with osteoarthritis, by site of joint pain, Canada excluding territories, 2009

	Osteoarthritis (any joint)	Hip and knee	Hip	Knee
Total	1,755	504	229	499
Age group				
20 to 49	196	54	28	53
50 to 64	575	167	73	173
65 or older	984	283	128	273

Source: 2009 Survey on Living with Chronic Diseases in Canada—Arthritis.

Table C
Sample counts for calculations of characteristics of household population aged 20 or older diagnosed with osteoarthritis, by site of joint pain, Canada excluding territories, 2009

	Osteoarthritis (any joint)	Hip and knee	Hip	Knee
Age first diagnosed	1,714	492	222	490
Age symptoms first experienced	1,616	484	218	482
Difference between age of diagnosis and experiencing symptoms	1,602	479	215	480
Symptoms preceded diagnosis	639	216	80	192
Symptoms same year as diagnosis	779	205	106	239
Symptoms followed diagnosis	184	58	29	49

Source: 2009 Survey on Living with Chronic Diseases in Canada—Arthritis.